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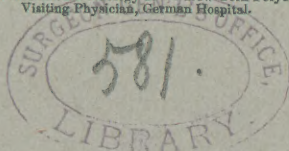
CHOLELITHIASIS WITHOUT
ICTERUS :

CASUISTIC AND DIAGNOSTIC REMARKS.

BY

I. ADLER, M. D.,

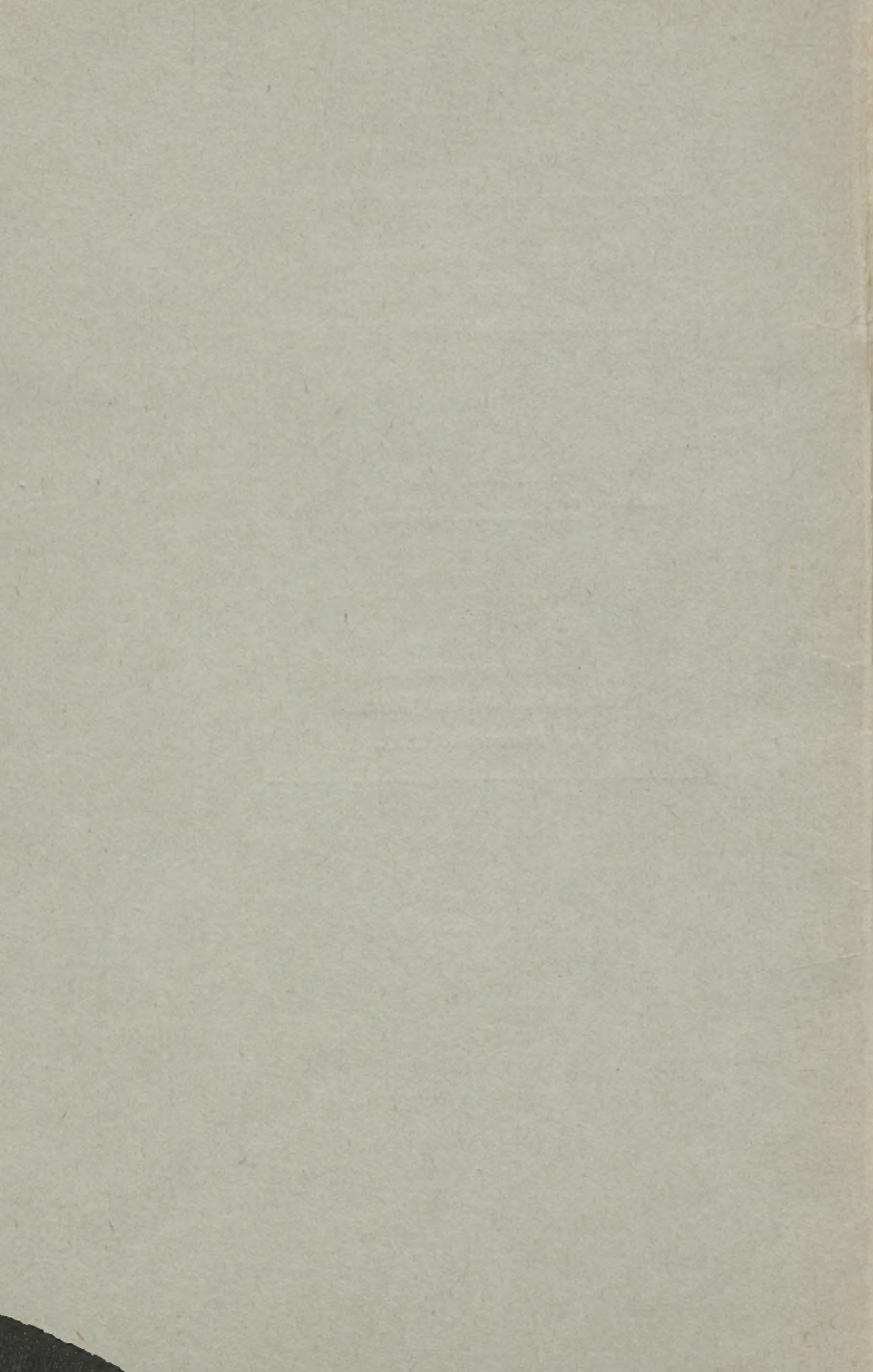
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REPRINTED FROM THE

New York Medical Journal

for February 27, 1897.



*Reprinted from the New York Medical Journal
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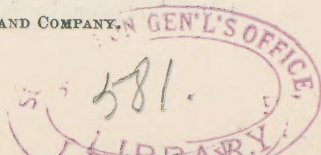
CASUISTIC AND DIAGNOSTIC REMARKS.*

By I. ADLER, M. D.,

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IN recent years an enormous literature on the subject of cholelithiasis with irregular symptoms, particularly as to biliary calculi with an absence of icterus, has arisen; but it would seem that, despite this fact, a thorough knowledge of that form of cholelithiasis which runs its course without jaundice has not been acquired by the general practitioner, especially in this country. A detailed discussion of this branch of the subject is therefore timely and useful. In undertaking, at the invitation of the president, briefly to review in your presence the theme of gallstones without icterus, I can not assume to discuss all the questions arising in this connection, nor can I more than refer to some of the complications and obscurities which present themselves. I ask your permission only to consider briefly and on the

* Opening remarks of a discussion at the German Medical Society of the City of New York.



basis of my own experience a few of the more important clinical, diagnostic, and therapeutic points.

In the vast majority of cases coming under this heading we have to deal with affections of the gall bladder and of the cystic duct. There are, however, observations recorded in which, after impaction of a gallstone in the common or in the hepatic duct, the disease has run its course, especially in the later stages, without jaundice; and this occurs when the ducts attain such a degree of dilatation that the bile can readily flow by the impacted stones. Some years ago I had the opportunity of performing an autopsy in a case—which was very interesting for other reasons, and which has been published by Dr. Moschowitz—in which the gall bladder, the cystic duct, and the ductus choledochus up to the papilla of Vater, were filled with gallstones, as was also the hepatic duct, and in which the biliary passages were so dilated that a stasis of bile was impossible. As a matter of fact, no jaundice was present, at least during the period of observation. But I will not venture further into this field nor will I discuss diseases in more distant organs occasioned by gallstones, such as ileus due to biliary calculi, obstruction of the pylorus, pylephlebitis, and thrombosis, all of which are usually not associated with jaundice; for these digressions, cognate as they are to our discussion, would lead us too far.

It is an old-established and unquestionable fact that calculi may lie in the gall bladder for many years, for even a lifetime, without calling forth clinical manifestations or decided anatomical changes. According to Schröder's statistics, gallstones are found in twelve per cent. of all autopsies. If the calculi do produce symptoms, however, by far the most frequent is biliary colic.

This arises from the forced entrance of a stone into a biliary passage, in our cases into the cystic duct. The active causes in driving calculi from the gall bladder into the cystic duct have not yet been clearly ascertained; but it appears to be definitely proved that processes going on in the stomach and intestines play an important rôle. It has been ascertained that increased peristaltic movements of the stomach and intestines, that traction due to a distention of the gut, to unusually severe exercise, etc., evoke spasmodic contractions of the muscles of the gall bladder, which tend to drive the calculus toward the duct. Riedel doubts, and as I think justly, whether the rather slight muscles of the gall bladder are capable of exercising such colossal pressure, especially when the cystic duct is patent. He assumes that in every case an initial inflammatory process causes, on the one hand, intumescence and stenosis of the cystic duct with consequent stasis in the gall bladder, and on the other hand increases the pressure within the gall bladder by inflammatory transudation to such an extent that the calculus is driven into the cystic duct with great force. He leaves us entirely in the dark, however, how to account for such an inflammatory condition or how to explain such an aseptic process; and it must certainly be aseptic, for in a whole series of cases the bile was found to be sterile even during an attack.

If the calculus is small it is driven through by the spasmodic contractions of the cystic duct, passes through the common duct, and reaches the intestines. If the stone is larger—and these are the cases which interest us principally—various possibilities may arise. The stone may remain impacted in the neck of the gall bladder and thus cause a permanent closure of the cystic

duct. The calculus may fall back into the gall bladder, the irritation ceases, the bile again finds its usual outlet, and the condition of affairs remains temporarily or permanently as it was before the attack. It is possible, again, for the calculus to be driven for some distance into the cystic duct, where it can be tightly grasped by the mucous membrane and the muscles of the duct, and a permanent obstruction of the duct is thus established as the result of the impaction aided by inflammatory proliferation of the surrounding tissues. Again, the duct may become dilated, first above the obstruction and later all around it. In this event, the bile again flows normally, the morbid symptoms disappear, and the normal functions are apparently carried on despite the presence of the calculus. The stone can continue to grow, too, although impacted in the cystic duct. In this manner enormous dilatation can be produced or diverticula are caused, and these may evoke, through pressure upon the neighboring organs, such as the common duct, the liver, the portal veins, or the intestines, the most severe and the most complicated pictures of disease. Infection also rarely remains absent. Infectious cholangitis and cholecystitis result, most frequently by means of the ubiquitous *Bacterium coli commune* or the pus-producing cocci. In this manner pericholangitic abscesses, ulcerations of the mucous membrane, perforations into the peritoneal cavity and into the neighboring organs, particularly the intestine, are produced. General sepsis may easily follow or accompany these processes. As malignant and acute as these manifestations sometimes appear, just as frequently do their phenomena remain latent and insignificant. It seems certain that extensive adhesions of the gall bladder and the cystic duct to the

organs in the vicinity, the liver, the stomach, the intestines, the omentum, the abdominal wall, may be formed without demonstrable gross pathological changes in the walls of the gall bladder or of the duct. Calculi may remain wedged in the cystic duct for years, may increase in size, may even lead to ulceration of the mucous membrane and the formation of extensive cicatrization without at any time producing clinical symptoms. Finally, however, a time arrives when, either through infection or through some other cause, the entire process lights up acutely and violently, or perhaps insidiously and gradually, and presents before us a grave and often a very obscure clinical picture.

The clinical phenomena are even more irregular and obscure than the pathological changes which I have but cursorily glanced at. In the first place, it may be said that all these processes which affect the gall bladder and the cystic duct cause no jaundice as long as the hepatic and the common ducts are not involved. We find, therefore, an absence in this group of diseases of the one prominent symptom which at once directs attention to the liver and an obstructed flow of bile. It is easily comprehensible, therefore, that the diagnosis of these cases, although under certain circumstances simple enough, may become very difficult. Sometimes, indeed, it is simply impossible to reach an exact diagnosis and we must content ourselves with conclusions of more or less probability. And yet in the majority of cases it is possible, with a careful consideration of all the points in the history and with a thorough knowledge of the processes coming into play, to reach conclusions sufficiently definite to determine our therapeutic measures; and this is the salient point; for it is particularly true of these

cases that correct treatment at the proper time may be actually life-saving. In view of the almost endless variety of clinical pictures with which we have to deal, it seems proper, instead of attempting to portray a hard-and-fast array of symptoms as they appear in individual cases, to consider some of the more important symptoms as to their diagnostic value.

Pain is one of the most striking symptoms; for nearly all patients who suffer from gallstones, be it with or without jaundice, have pain at some time in the course of their illness. Frequently, it is the main subjective complaint, and is often manifested as the typical biliary colic, though, of course, in the cases here considered, without the appearance of icterus. Frequently the pain is referred to the classical spot in the right hypochondrium, radiating toward the median line and the epigastrium, and extending into the back and shoulders. But in a large number of cases, and especially in those affections of the gall bladder and the cystic duct with which we are at present concerned, the pain is referred mainly, almost exclusively, to the pit of the stomach. At the same time this point is particularly sensitive to pressure, and one must be on his guard not to confound this condition with ulcerations of the stomach and kindred lesions. In this connection, I wish to mention that Boas's pressure points as means of differential diagnosis have been of little service to me. I have no experience with reference to them in cases of gastric ulcer, but in cases of gallstones I have not been able to convince myself that typical painful points exist at the lower end and to the right of the dorsal vertebræ. Moreover, we find gallstones so very often among elderly women, in whom the dorsal vertebræ are not uncommonly hyper-

æsthetic. Further, I would call your attention to a point of great practical importance—namely, that not infrequently in calculous disease of the gall bladder and the cystic duct the patients refer their pain to the ileocæcal region. This occurs not only in the later stages after pus has formed, when even the surgeon finds it difficult to determine whether the source of the suppuration lies in the gall bladder or in the appendix, but also at the very outset of the disease, long before palpable inflammatory symptoms have developed. In rare instances this striking phenomenon depends upon the fact that the distended gall bladder has been dislocated downward toward the iliac fossa, often attached to a constricted and floating portion of the liver. The position of the liver and gall bladder may, however, be entirely normal and the pain still be referred to the iliac fossa. On the other hand, cases of appendicitis are not infrequently met with in which, especially in the beginning of the disease, the subjective pain is localized in the right hypochondrium instead of in the ileocæcal region. This is easily understood in instances in which the elongated appendix is deflected upward toward the liver; but this peculiar localization of pain has been observed when the appendix occupied an entirely normal position. I am not able to offer any plausible explanation of this seeming paradox.

Very often, however, the typical biliary colic does not appear, and the pain accompanying the passage of the calculi through the ducts is of an entirely irregular and atypical character. Indeed, it is my conviction that by far the greater majority of biliary colics are of this irregular type and as such escape the notice of the physician altogether. The patient diagnosticates his pain as

“neuralgia,” “wind colic,” “indigestion,” etc., and attributes it to indiscretions in diet, imperfect evacuations of the bowels, “colds,” etc.; and, as a rule, prescribes for himself with perfect success the ordinary purgatives. Now, it is undoubtedly true that there are a number of affections, functional and organic, that can give rise to more or less acute pain in the epigastric and right hypochondriac regions. As such may be mentioned the true neuralgia of the liver described by Fürbringer, certain forms of gastric disease that are associated with hyperacidity, ulceration of the stomach, cancerous or otherwise, and the various neurotic conditions localized in this region, especially those of pure hysteria, etc. But all of these present besides the pain other well-marked symptoms, and can, in most instances, be easily recognized. In all those cases of more or less severe acute pain in the epigastric or right hypochondriac regions in which the conditions just mentioned can be excluded, it is safe to assume with some assurance that we have to deal with atypical biliary colics. The fact that the attacks so frequently follow indiscretions in diet or are ostensibly relieved by a purge does not militate against this assumption; for we know that the ordinary biliary colic, too, is often stimulated by irregularities in the gastro-intestinal tract. It is a further confirmation of this view that these “cardialgic” attacks occur almost exclusively in women, and this harmonizes well with the fact that women are by far the most frequent sufferers from gallstones.

Judging from my own experience, I can most emphatically indorse Riedel’s warning not to regard it as an infallible sign that a gallstone has passed the ducts and arrived in the intestine that the pain has dis-

appeared and the patient feels perfectly well. After the attack of colic, when examination of the fæces discloses no calculus, this is not always due to an oversight or to the fact that the stone has become disintegrated and unrecognizable, but very frequently to the fact that there has been no calculus in the intestines. The calculus simply did not find its way into the gut, but either dropped back into the gall bladder or remained impacted somewhere in the biliary passages, where it may shortly produce other severe attacks, or where it may quietly and unobserved cause ulceration or inflammatory processes which can at any time make themselves evident with symptoms of the gravest character.

At the time when the physician sees the patient there is frequently no longer a complaint of pain. The anamnesis elicits the fact, however, that almost without exception severe attacks of pain have been present, sometimes often repeated, and usually just before the physician is summoned. Objectively, sensitive areas can be found. As a rule, the liver is neither enlarged nor painful on palpation. But the region of the gall bladder or the epigastrium or both may be sensitive to pressure. When the recti muscles are relaxed and the lower edge of the liver is grasped from the gall bladder toward the median line, deeply seated painful points may often be discovered. Severe pain may sometimes be called forth in a liver which is not sensitive to ordinary palpation by *concussion* produced by pushing the flat hand quickly and sharply against the lower ribs from left to right. When diseases of the liver itself, peritonitis, inflammatory processes in the chest, and kindred lesions can be excluded, this symptom of pain on concussion of the liver is a valuable diagnostic sign of inflammatory pro-

cesses going on at the inferior surface of the liver, which is not accessible to palpation.

In rare cases, all objective signs of pain may be absent while all other clinical symptoms point to grave disturbances. Under these conditions, the anamnesis and the exclusion of all other possibilities must decide the diagnosis. A case which I recently saw through the kindness of Dr. S. Baruch was most instructive in this respect:

The patient, an elderly lady, who had previously frequently suffered from "stomach troubles," was suddenly seized at night with an intense colic localized in the epigastric region. Despite large doses of morphine, the pain continued for several days. The epigastrium alone appears to have been sensitive to pressure. There was no jaundice, but shortly after the commencement of the pain fever of a decidedly remittent type appeared which, preceded by slight chilliness, repeatedly reached 104° F. and even higher. When I saw the patient the pain had entirely disappeared, but the fever continued, and was in the neighborhood of 103° F. at the time of my examination. The liver was of normal size, the gall bladder could not be felt, there was not the slightest sign of a painful pressure point nor any palpable anomaly. There had evidently been a biliary colic and an infection the results of which had survived the passage of the stone into the intestine. After the administration of a strong cathartic, a large number of small cholesterol calculi of recent formation were passed, and the patient recovered without further complications.

The *behavior of the gall bladder* is exceedingly variable. Oftentimes it can be felt in its typical location as a tense, firm, elastic tumor extending beyond the lower edge of the liver. Sometimes it is enormously distended and movable, especially when it is attached to a movable

portion of the liver (*Schnürlappen*). A case is recorded in which the enormously dilated and dropsical gall bladder was mistaken for an ovarian cyst. Under such circumstances it can become rather difficult to differentiate between the gall bladder, floating kidney, etc., difficulties upon which we will not enter. On the other hand, the gall bladder is very frequently not distended, there is no enlargement whatever; on the contrary, it is atrophied and shrunk far below its normal size. Courvoisier has proved by statistics, and Ecklin has recently confirmed and elaborated his statements, that obstruction of the biliary passages by the impaction of calculi is in the majority of cases accompanied by a small, atrophic gall bladder, whereas when the obstruction is due to malignant tumor, dilatation and enlargement of the gall bladder is the rule. However, even when the gall bladder is distended and enlarged, it is not always easy to recognize it. It may be so covered by the liver that its palpation is impossible or, at least, difficult and unsatisfactory. The following case will serve as an illustration:

Mrs. V., about fifty years of age (Dr. Torek), has suffered for years from occasional "cardialgic" attacks, but was never jaundiced. During the night she had typical attacks of biliary colic, but neither icterus nor fever. The severe pain was alleviated by opiates, but dull pain, nausea, and vomiting continued. When I saw the patient she complained of great exhaustion, nausea, a dull, dragging pain in the region of the liver and in the epigastrium. The liver was not enlarged; the region of the gall bladder was sensitive to pressure. By deep palpation under the arch of the ribs it was just possible to make out the very tip of the gall bladder as an elastic and very sensitive round body. This was also the point of greatest sensitiveness. Concussion of the liver was decidedly painful. The temperature was 101.5°

F. All the other organs were normal. The urine showed a faint but distinct reaction for bile pigments. During the following days the spontaneous pain disappeared, as did the vomiting, the pulse improved, but the temperature gradually rose without marked chills to 102.5° F. The gall bladder did not become more prominent, but the tension and sensitiveness of the lower portion, that could be made out with great difficulty, appeared decidedly increased. Cholecystotomy was advised and performed by Dr. Willy Meyer. At the operation the gall bladder was found to be almost entirely hidden away under the liver, and to reach it presented considerable technical difficulty. It was much dilated and was filled with a considerable quantity of thin, serous bile. Its walls were congested, thickened, and in a state of acute inflammation. A large number of faceted calculi, some as large as a cherry, were removed. Good recovery.

The walls of the gall bladder are often much thickened and the seat of fibrous or calcareous degeneration. Under such conditions it is not always an easy matter to distinguish by palpation alone between a merely degenerated gall bladder and a neoplasm, especially when large calculi which are snugly embraced by the thick and degenerated walls produce a distinctly nodular surface. The gall bladder, besides the stones, may contain normal bile, or the bile may be more or less inspissated, or, in consequence of profuse serous transudation from the inflamed walls, the bile may become thin and watery—hydrops of the gall bladder. Following this, infection often takes place, pus is formed, and instead of simple dropsy we have empyema of the gall bladder. In consequence of direct mechanical injury from calculi, especially from large, hard, and angular ones, more or less profuse hæmorrhage into the gall bladder may result.

The following cases may serve as examples:

Mrs. R., an elderly lady, I had once before seen with her physician, Dr. Kakels, for severe hysterical manifestations simulating meningitis. The patient, who habitually suffered from ever-varying hysterical attacks of pain, complained suddenly of intense pains in the stomach and abdomen; simultaneously with this, frequent and copious vomiting; no icterus; no fever. The pains increased in severity, but it was almost impossible to examine the excited, hysterical patient. When I saw her, she was in a condition bordering on acute mania. She threw herself about, shrieking and yelling, jumped into and out of bed, and could hardly be kept from doing herself serious injury. On close questioning, though she maintained that she had excruciating pain everywhere, it seemed, nevertheless, that the principal pain was located in the upper part of the abdomen. Since the last visit of her physician, the temperature had risen to above 103° F., suddenly and with initial chills. With much difficulty an examination could finally be made, which disclosed, besides general hysterical hyperæsthesia, a normal condition of all organs, with the exception of the region of the gall bladder, where a distinctly increased resistance and intumescence could be made out. Here, too, was excessive tenderness of touch. The urine contained no biliary coloring matter. From these data it was considered probable that we had to deal with impaction of a stone in the cystic duct or in the neck of the gall bladder and empyema of the latter. Examination under ether with a probable cholecystotomy were advised. This was done by Dr. Lange. When the gall bladder was opened, its walls were found to be largely thickened with universal calcareous deposits. It contained a huge calculus, which was impacted with its more slender end in the neck of the gall bladder and in the upper part of the cystic duct. The gall bladder contained, besides, a large quantity of fluid blood which probably had its source in the mechanical irritation of the walls of the gall blad-

der by the large calculus, enhanced, no doubt, by the violent jactitation of the patient. Recovery.

Mrs. M., forty-two years old. Seen with Dr. Rapp. A nervous woman, inclined to be hysterical. From her previous history it is learned that she suffers from occasional attacks of "cramps," which are ascribed to errors in diet, and which run their course without jaundice or fever. The present illness began on January 3, 1896, with an indefinite sense of pressure in the upper abdominal regions. This was first suddenly noticed while the patient was taking a walk, and became more troublesome during the night. On the following day she was seen by her physician, but an examination at this time was entirely negative. This sense of pressure, without positive localization, continued until January 6th, when, in an attempt to move the bowels, a sudden chill and subsequent high fever appeared. I examined the patient on January 7th with Dr. Rapp. We found thoracic organs normal; pulse small, rapid. The patient was anxious and excited. Tongue thickly coated. Liver not enlarged, and not painful on palpation. There was great pain, however, on concussion of the liver. Spleen somewhat enlarged. Epigastrium painful on pressure. There was an increased resistance in the region of the gall bladder, and the entire area was somewhat intumescent, but no distinct tumor could be made out. Owing to the extreme sensitiveness of this entire area, palpation was not possible to such a degree of exactness as would have been desirable; nevertheless, there was a distinct impression of a doughy, somewhat elastic, diffuse swelling. The other abdominal organs were normal. The urine contained neither sugar nor albumin, but gave a distinct reaction for biliary coloring matter. The temperature, of remittent type, ranged from 101.5° F. to 104° F., and even higher. A rise of temperature was always preceded by chilliness. The skin was pale, with no trace of icterus. There could be no doubt that this was a case of infectious disease of the gall bladder, probably with occlusion by a calculus. The course of the

temperature and the doughy, diffuse swelling rendered the diagnosis of empyema of the gall bladder probable. An operation was suggested and was performed by Dr. Lange on January 9th. A large empyema of the gall bladder was found, and in addition to numerous stones in the gall bladder there were a number of calculi, some of the size of a cherry, impacted in the neck of the bladder. Recovery.

In consequence of adhesions, old inflammatory processes, cicatrization, etc., the gall bladder may be so dislocated from its normal position and so altered in its configuration that it may become almost impossible to recognize it as such by palpation, and the diagnosis thus becomes correspondingly more difficult.

Mr. M., a robust man of some thirty odd years of age, had suffered repeatedly for a few years from occasional severe, typical attacks of biliary colic; besides these, he had at times irregular attacks of pain, often very intense, which had been variously regarded by his physicians—by some as irregular cholelithiasis, by others as neuralgia or gastralgia, as malaria, etc. Now the attacks ceased for some months altogether, and during this time the patient felt perfectly well. It was during this interval that I had an opportunity of examining him and noted these points: A robust, well-built man, with good pulse and regular, normal functions. Thoracic organs normal. The liver extended several centimetres beyond the arch of the ribs, but was not painful on touch or concussion. The area of attachment of the right rectus muscle to the ribs, and slightly to the right of this, presented increased resistance and slight relative dullness on percussion. Pressure over this area elicited pain, and this sensitiveness extended up into the epigastrium. A tumor or swelling could not be felt, even with the greatest possible relaxation of the recti. Contraction of the recti muscles was somewhat painful. The stomach offered no morbid symptoms. The spleen was distinctly enlarged. The other abdominal organs and the urine were

normal. I concluded that in consequence of the frequent severe attacks of gallstones there were multiple adhesions of the gall bladder with the neighboring organs, particularly with the abdominal wall and the rectus muscle. In the mean time there was nothing to be done but to watch the course of affairs, since the patient was well and free from pain. After some months, in the summer of 1891, while the patient was in the country, he was suddenly seized with violent pain, vomiting, and fever. The attending physician diagnosticated appendicitis and hastily summoned a well-known and experienced surgeon who confirmed the diagnosis, and laparotomy was performed late at night. The removed appendix was, it is true, the seat of a catarrhal inflammation and was thickened; but it was not ulcerated nor was there purulent infiltration. There was also no sign of a general peritonitis, so that we are, perhaps, justified in assuming that although the patient was well rid of his appendix, the *causa morbi* did not lie in that organ. The patient recovered without difficulty from the operation and remained in good condition during the winter. In March, 1892, disturbances began to manifest themselves again: Loss of appetite, general malaise, sensations of pressure and pain, especially referred to the pit of the stomach. The pain was, as a rule, not very intense, but occasionally very severe attacks of pain appeared which had, however, no characteristic type. After a time a mild fever, 100° to 101° F., was noted. The urine showed a strong reaction for bilirubin. Pressure over the epigastrium became very painful, and the patient referred all his pain to this region. The region of the gall bladder showed sensitiveness to pressure, decidedly increased resistance, as compared with the former examination, an indistinct, quite diffuse intumescence; but there was no well-defined tumor, no fluctuation. A very slight jaundice of the skin and conjunctivæ became perceptible. It was concluded that an inflammatory process of infectious character had taken place in the adherent and dislocated gall bladder, and immediate operation was advised. The

operation was performed by Dr. McBurney, March 27, 1892. The suspicion of empyema of the gall bladder was strengthened by the appearance, on the day before the operation, of a chill with a temperature of 103° F. The results of the external examination were so indefinite and slight, however, that the surgeons expressed themselves with great caution, and the laparotomy was regarded primarily as exploratory. The incision was made to the right of the rectus abdominis muscle, at the point of greatest resistance and intumescence. The fascia transversalis was found tense and somewhat bulging. As soon as this fascia was incised, there was a profuse flow of thick pus mixed with a large number of faceted stones. The gall bladder, as such, did not appear in the field of operation at all. After the pus was evacuated, a large cavity with irregular walls could be seen. This was adherent anteriorly to the abdominal wall and extended upward and inward toward the epigastrium. In its depths the cystic duct could be traced with some difficulty. The duct was filled with gallstones, and it was only after their laborious removal that at last bile began to flow through the wound. It seems safe to assume that in this case numerous adhesions of the gall bladder with the surrounding organs had existed for a long time and had served to distort and dislocate it. The sudden seizure in the summer, with peritonitic symptoms, referred to the appendix, was possibly due to perforation of the gall bladder, but which, owing to the matting together of the gall bladder, abdominal wall, etc., did not result in general but merely in local peritonitis. Subsequent infection caused the abscess. Numerous calculi were discharged in the course of the next few weeks following the operation. Otherwise the recovery was uneventful.

It may happen that all the inflammatory and infectious lesions affecting the gall bladder are accompanied by disturbances so slight and insignificant that the patient does not judge them sufficiently serious to consult a

physician. The first and at once grave symptom for which medical aid is called is that of a peritonitis due to perforation either of the gall bladder, the duct, the intestines, etc.

Mrs. R., a patient of Dr. Wiener, aged fifty-two years, is a stout, nervous woman, with signs of premature arteriosclerosis and fatty heart. She suffers frequently from gastric disturbances and cardialgia. On November 1, 1895, the patient consulted her physician on account of a diarrhœa which had annoyed her at intervals for about ten days. There was no pain. Loss of appetite was her only complaint besides the diarrhœa. Physical examination at that time discovered nothing abnormal. The urine contained neither albumin nor biliary coloring matter. During the night of November 3d the patient, who in apparent good health had retired to bed after a very heavy meal, was suddenly seized with acute and very intense pain in the epigastrium and in the right hypochondrium, together with vomiting and with all the symptoms of collapse. The vomiting and pain continued throughout the next day. The temperature began slowly to rise. I saw the patient on the afternoon of November 4th. The temperature then was 103.5° F.; the pulse feeble, rapid, irregular; there was a slight cyanosis of the lips and finger nails. Continuous nausea and vomiting. The pain was quieted by morphine. The abdomen was distended. Pressure over the epigastrium was very painful. At the right of the epigastrium, extending along the arch of the ribs and downward toward the umbilicus, there was decidedly increased resistance, and over this area some dullness and extreme sensitiveness on pressure. On account of this condition the lower edge of the liver could not be satisfactorily made out. Concussion of the liver was very painful. There was no jaundice. With the exception of considerable tympanites, no other morbid condition in the abdomen could be found. The bowels were constipated, and, although high enemata had not been effectual, gas was freely and

spontaneously passed. The urine contained no albumin, but unmistakably bilirubin. The lungs were normal. The cardiac dullness was increased in both directions, especially toward the right. The heart sounds were rather faint, somewhat rough, and the second aortic sound strongly accentuated. From the data it seemed evident that a peritonitis was present. The sudden onset, the acute and intense pain, the collapse, the rapidly rising temperature, pointed to a perforation as the cause. The dullness in the region of the gall bladder, the augmented sensitiveness to pressure over this area, the localization of the spontaneous pain in the same region, indicated the gall bladder as the site of perforation. On this account laparotomy was advised, but it was agreed, in accordance with the opinion of Dr. Lange, to wait until the patient had somewhat recovered from the first shock of the perforation. On November 5th the patient's general condition was somewhat better, the pulse was rather stronger, the vomiting had ceased. The temperature, however, remained high, and the dullness and pain in the region of the gall bladder were even more pronounced, although strictly limited to this region. On November 6th the operation was done by Dr. Lange. The incision at the assumed location of inflammation—which, owing to the mass of subcutaneous adipose tissue, was an unpleasantly deep one—disclosed, as was expected, a purulent peritonitis in the neighborhood of the gall bladder. The latter was much distended and tense, and about four ounces of turbid, purulent bile were removed from it by aspiration. Thereupon, incision of the gall bladder. Its walls were found thickened, inflamed, in part necrotic, and perforated in several places. A large calculus was impacted in the neck of the gall bladder, and an attenuated prolongation of it extended into the upper part of the cystic duct. It is fair to assume that the cystic duct had been occluded by the calculus for a long time, while the latter had continued to grow in the direction of the gall bladder. Slow and insidious infection followed, associated with inflammation

of the walls of the bladder and retention of the inflammatory and suppurative exudation within the cavity. The increased pressure tended still further to injure the walls, thus resulting in necrosis, and finally perforation. The entire process had been latent, and the first appreciable symptom appeared after perforation had taken place. The patient's recovery was uneventful.

I can not avoid briefly mentioning another case which, strictly speaking, does not come within the limits of our discussion, and which has already been referred to in a publication by Dr. Lange. Let the interest which attaches to the case be my excuse.

Mr. E., about fifty-six years old, a well-built and healthy man, though occasionally subject to neurasthenic disturbances, more especially insomnia, has never had a real serious illness. Gastric functions always good. Is at times slightly inclined to constipation. On close inquiry, he admits that on rare occasions he has suffered from short spells of colicky abdominal pain, always referred to the inferior portion of the abdomen. The attacks he usually attributed to some imprudence in diet, and a mild cathartic always sufficed to give him prompt relief. On the night of the 12th to the 13th of March, 1896, the patient, who had retired to bed apparently in perfect health, was suddenly seized with severe pain. As he had eaten heavily the evening before and had indulged in several glasses of beer, he attributed his pain at first to indigestion. There was no constipation, as the bowels had been evacuated regularly and completely. The pain was localized exclusively in the umbilical region, was quite severe but not constant, appearing in spells of varying duration separated by intervals of comparative comfort. There was no vomiting, but considerable nausea, and the patient complained of great prostration and debility and a troublesome rumbling of gas in the intestines. I saw the patient on the morning of the 13th. He was rather pale, but had a good pulse of

80; quiet respiration; temperature, 99.6° F. Nausea and very severe attacks of pain in the umbilical region were the main complaints. Heart and lungs were perfectly normal. The tongue was somewhat coated and moist. There was no sensitiveness in the epigastric region, the liver was not enlarged, and was not sensitive to pressure or to concussion. The gall bladder could not be felt. The transverse and ascending colon and the ileocæcal region were sensitive neither spontaneously nor to deep pressure. Directly about the umbilicus, a little above it and to the right, there were great sensitiveness to pressure and increased resistance, but no dullness. The urine contained no sugar, no albumin, no bilirubin, but showed an increase of indican. No other lesion could be found. As morphine was not tolerated, suppositories of codeine were ordered, and a few of these sufficed to control the pain. In the evening there was nausea but no vomiting. The pain had almost entirely disappeared, but the areas mentioned were even more sensitive than in the morning. The resistance was increased, but there was no demonstrable dullness. Pulse, 96; temperature, 101° F. On the morning of the 14th the pulse was 100, the temperature 102° F. The tongue showed a tendency to dryness, the rumbling of gas in the intestines was still troublesome, though abundant flatus escaped, and there was incipient tympanites. Immediately above the umbilicus and somewhat to the right of it there is increased resistance, distinct dullness, and extreme sensitiveness to pressure. In all other respects the examination shows no changes as compared with the day before. In the afternoon the pulse rose to 120, temperature to 103.5° F.; the dullness is more pronounced. It was evident that we had to deal with a peritonitis which, though for the time being confined to the central region of the abdomen, showed, nevertheless, a progressive tendency, as evidenced by the constantly rising pulse and temperature and the slow extension of the area of dullness. The sudden onset while in perfect health and the intensity of the initial pain spoke for a perforation. The appendix,

gall bladder, stomach, and colon, according to the data just detailed as the result of careful examination, were plainly not involved. Hence the assumption seemed plausible that the perforation was located somewhere in the small intestine, possibly as the outcome of some chronic catarrhal ulcer which, as is well known, may up to the time of perforation remain entirely latent, causing no symptoms whatsoever. Guided by these considerations, it was decided not to wait for further developments, but to proceed to laparotomy at once. The operation was performed by Dr. Lange the same evening, about thirty-eight hours after the appearance of the first symptoms. The abdomen was opened at the point of greatest dullness and, as expected, a recent peritonitis, with cloudy, seropurulent exudation, and fibrous pseudomembranous deposits was found. The attempt to follow the track of the inflammation to its origin led to the vertebral column, in front of which, directly abutting upon the lower margin of the horizontal portion of the duodenum, a gangrenous mass of tissue was laid bare. The further development of the case was entirely favorable. In about a week the thick, necrotic slough could be removed, during which manipulation intestinal contents escaped from the duodenum. A few days later the point of a calculus appeared at the lower border of the duodenum at the place where the necrotic tissue had been removed, and was extracted without difficulty. After this the healing process continued undisturbed.

In this case neither the presence of the calculus in the biliary passages nor its transit through them into the intestine appears to have given rise to any disturbance. Having reached the duodenum, it produced, from causes entirely obscure, ulceration, and finally perforation of the wall of the gut. With the perforation appeared the first clinical symptoms, and these assumed from the very outset a most acute and grave character. There was absolutely nothing, either in the history of the patient or in the clinical and physical symptoms as they gradually developed, that pointed in the least toward

gallstones. Even the laparotomy did not give us a clear insight into the true condition and sequence of affairs. The appearance of the gallstone at the place of necrosis at last furnished unmistakable testimony as to what had actually taken place.

A peritonitis may occur, however, without any perforation. In these cases, the inflammatory and infectious agents affect surrounding tissues through the walls of the gall bladder or duct. Ulcerations and necroses of the coats of the gall bladder extending down to the serosa may also cause acute peritonitis without actual perforation.

Mrs. H., a corpulent woman about thirty-four years of age, has in former years frequently suffered from "colic" and "cardialgia," the last time five years ago. In August, 1892, normal birth of her third child and a normal puerperium. During the night of the 6th to the 7th of October, 1892, she was, without premonition, seized with very severe pain in the epigastric region. There had been no constipation nor any demonstrable error in diet; no fever. The pain was localized at the pit of the stomach, radiating toward the back. The next day the pain continued, but was much diminished in intensity. The abdomen was not distended; the epigastrium was very sensitive to pressure. The liver was painful on palpation and concussion; sensitiveness to pressure also in the right ileocæcal region. Pulse, 96; temperature, 101.5° F. In the course of the day the bowels were freely and spontaneously evacuated and gas passed in large quantity. In the evening the patient had no spontaneous pain, but there was intense sensitiveness to pressure at the points mentioned. Temperature and pulse the same as in the morning. On October 8th there was little spontaneous pain, but severe pain accompanied every motion, even deep respiration. Directly beneath the right arch of the ribs at the level of the hepatic flex-

ure of the colon, distinctly increased resistance, slight swelling, and dullness can be demonstrated. Temperature, 101° F.; pulse, 100. No vomiting; no nausea; no icterus. The urine contains no sugar; no albumin; but traces of bilirubin. In the course of the day the resistance and swelling increased at the place described; in the evening the temperature was 101.5° F. The swelling was now visible at a distance, and the entire area was extremely painful upon the slightest touch. The ascending colon and the ileocæcal region also continued extremely sensitive. During the night there was a severe chill. Temperature, 104.5° F.; pulse, 128; otherwise no change. On the next day, October 9th, the temperature remained high, ranging between 102° and 103.5° F.; the abdomen was not tympanitic; flatus passed freely. The swelling had increased in extent and sensitiveness. Pain on touch in the iliac fossa unaltered. The liver not enlarged. No jaundice, but the urine contains bilirubin.

It was not easy to decide in this case between appendicitis and empyema of the gall bladder, especially in view of the continued sensitiveness in the ileocæcal region. Yet the absence of any exudate in the region of the appendix, the confinement of peritonitic symptoms to the right hypochondrium, the bulging in that region, the presence of biliary coloring matter in the urine, the initial colic with exclusive pain referred to the epigastrium, the history of former attacks of "colic," appeared to justify the diagnosis of calculous occlusion of the cystic duct, empyema of the gall bladder, and probable perforation of the latter. Laparotomy performed by Dr. Lange, on the evening of October 9th, confirmed this diagnosis. Immediately upon opening the inflamed and cedematous peritonæum, the very tense and much-dilated gall bladder pushed into view through the wound. Upon opening this, copious purulent bile is discharged. From the neck of the gall bladder and the upper portion of the cystic duct eight quite large calculi were removed. The entire wall of the gall bladder

was greatly thickened and in a state of acute inflammation, with widespread purulent infiltration. In several places necrotic patches were found which extended down to the serosa, but did not perforate. The further course of the case was uneventful. Recovery.

The peritonitis is rarely general, as there are usually adhesions with the surrounding organs (the abdominal wall, the intestines, the omentum, etc.), the result of previous local and chronic inflammation; so that when perforation takes place, the exudate is, as a rule, sacculated and limited.

The fever not infrequently has important diagnostic value. Very often the attacks of pain are not attended with any rise of temperature; in fact, in the class of cases under discussion, typical biliary colic accompanied by rigors and fever is of rare occurrence. The milder cases, which terminate in the expulsion of the calculus, usually run their course without any elevation of temperature. If the stone becomes impacted, however, if the bile is obstructed in its flow, and if ulceration or infection sets in, fever is the rule. If the case is one of mild but progressive inflammation, with or without ulceration, the type of fever is slightly remittent, gradually increasing in height. If the case is one of more severe type, high fever, up to 105° F., and even beyond this, of a distinctly intermittent character, appears, the rise often initiated by a chill.

Under these conditions especial care must be taken not to confound these cases with malarial disease, the more so as we so frequently find the spleen demonstrably enlarged in these forms of irregular cholelithiasis. Whether the enlargement of the spleen is due to the general systemic infection or is the result of disturbance in

the portal system is not to be discussed here. In the majority of the febrile cases that have come under my observation it has been possible to demonstrate some enlargement of the spleen by percussion. In not a few the spleen was so much enlarged as to be easily felt at or even beyond the left arch of the ribs. Careful examination of the blood for plasmodia thus becomes imperative if we wish to be certain of our diagnosis.

In the *urine* nothing that is in any way characteristic can be made out on cursory examination. In a large number of cases, however, a distinct, though often faint bilirubin reaction is obtained, though there is a total absence of even the slightest trace of jaundice. This phenomenon may possibly be explained by the assumption that, owing to inflammatory or other morbid alteration in the structure of the mucous membrane of the gall bladder, some bile is absorbed there and finds its way into the circulation, but in quantities so minute as to produce no visible discoloration of the skin or scleræ, and to be detected in the urine only by means of Gmelin's test. Accordingly, it is self-evident (if this hypothesis is correct) that this reaction will be obtained only when the gall bladder contains bile and when its coats are not so far degenerated and diseased as to be incapable of absorption. We could not, therefore, expect the reaction when the gall bladder is atrophied, shrunken, or coated with calcareous deposits, when there is hydrops, empyema, etc. Nevertheless, this reaction possesses a certain diagnostic value. In the absence of jaundice and in the face of doubtful and obscure symptoms which, however, seem to point in the direction of cholelithiasis, the positive result of Gmelin's test can safely be taken as corroborative of this diagnosis. On the other hand,

it is evident that the absence of the reaction is of no diagnostic importance.

It would lead us too far to discuss here all those diagnostic considerations by which we are enabled to distinguish between the affection under discussion and lesions of the stomach, the intestines, the peritonæum, the kidneys, etc. I fear I have already taxed your patience. So much, I hope, is clear, that a diagnosis is not always easy, and that we must frequently be content with a balancing of probabilities. And yet, after a minute and searching physical examination, especially careful palpation, after close consideration of all obtainable data, particularly as to anamnesis, upon a precise exclusion of other lesions, it will usually be possible, at least in the majority of cases, to reach a definite conclusion. It is in just these cases that a prompt decision is often most urgently desirable with reference to our *therapeutics*. The mild cases of cholelithiasis, the "colics," which terminate with the passage of one or more small stones through the intestines, scarcely demand serious therapeutic interference. A subcutaneous injection of morphine, intelligent regulation of the diet and the general *régime*, and the use of Carlsbad waters are entirely sufficient for these cases. If, however, the attacks recur again and again at short intervals; if the calculi are not evacuated through the bowel; if the gall bladder becomes enlarged and distended; if points permanently sensitive to pressure are established; above all, if a gradually rising temperature appears, then the time for action has come. The physician should then no longer waste precious time with useless cholagogues, with opiates, and with cathartics: the time for *surgical interference* is at hand. It is not my task further to dilate upon the indications for

operation upon the gall bladder and ducts; this will be the task of most competent and experienced surgeons in the course of this discussion. I merely wish to emphasize this point: I am far from advising the immediate incision of every distended gall bladder when there happens to be a temperature of 100.5° or 101° F. It is well established that all these symptoms can disappear and a return to normal conditions take place; but when there is increasing even if not very high temperature, when septic phenomena are associated with local inflammatory or infectious alterations, even though the temperature is not excessive, we should not wait for the rare occurrence of the spontaneous resolution of even these symptoms; we should not procrastinate until perforation of the gall bladder or various other viscera has taken place; until peritonitis and general sepsis have set in and an operation is forced upon us as *ultimum refugium*; we should proceed to operative interference at once, which can now be done under more favorable conditions and will afford the patient the best chances of recovery or prevent further serious damage. We should follow this plan the more since it is a well-established fact that even if spontaneous regression of these menacing symptoms occurs, it will be only temporary, and before long the process will light up again in still more serious form. Thanks to the advances in surgical technic, these operations at the present time are deprived of much of their danger.

If the general practitioner, the family physician, will only bear in mind that there may be gallstone disease of the severest type without occlusion of the ductus choledochus and without icterus; if he will only attempt to track in every detail the sometimes obscure and ever-

varying manifestations of these diseases; if he will relegate cholagogues, cathartics, and opiates to their proper and very limited sphere; if he will become thoroughly conversant with these morbid conditions which often have such insignificant beginnings and which become menacing and dangerous so suddenly, he will turn to the surgeon at the right moment. We shall then hear less frequently of deaths from peritonitis of obscure origin, from "gastric fever," and the like; and by the close co-operation of internal medicine and surgery, an ever-increasing number of human beings will be rescued from death and from severe suffering.

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PUBLISHED BY

D. APPLETON & CO., 72 Fifth Avenue, New York.

